



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,253	08/09/2001	Martin Schmatz	CH919990008US1	1863
22150	7590	04/20/2005	EXAMINER	
F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797			BELLO, AGUSTIN	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/682,253

Applicant(s)

SCHMATZ, MARTIN

Examiner

Agustin Bello

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

97

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda (U.S. Patent No. 4,786,891) in view of Trezza (U.S. Patent No. 6,788,895).

Regarding claims 1 and 15, Ueda teaches an optical detector (Figure 12) for receiving an optical signal transmitted via an optical fibre cable, the detector comprising: an array of photo-sensors (reference numeral 21 in Figure 12) for location in the path of the optical signal; and a controller (reference numeral 31 in Figure 12) for detecting which of the photo-sensors receives the optical signal (e.g. "pick up a signal from the sensor array" column 7 lines 13-17), and deriving a received signal (e.g. output of Adder 37 in Figure 12) from any output of any said photo-sensor that detects the optical signal. Ueda differs from the claimed invention in that Ueda fails to specifically teach that the optical signals are transmitted via an optical fiber cable and further that any signals from photo-sensors that do not receive the optical signals are discounted, for automatically aligning the optical fiber to at least one of the photo sensors. However, Trezza teaches both of these limitations (Figure 3B and column 4 lines 32-47; column 5 line 57 – column 6 line 4). One skilled in the art would have been motivated to employ the teachings of Trezza in the device of Ueda in order to use small amount of power (column 5 lines 66-67 of

Art Unit: 2633

Trezza). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to transmit the optical signals via an optical fiber cable and further discount any signals from photo-sensors that do not receive the optical signals, for automatically aligning the optical fiber to at least one of the photo sensors.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Margolin (U.S. Patent No. 4,762,391) in view of Curbelo (U.S. Patent No. 5,262,635).

Regarding claim 14, Margolin teaches an optical communication system having at least one optical fibre (reference numeral 15 in Figure 1) and an optical detector (reference numeral 141 in Figure 1) facing an end of the optical fibre, wherein said optical detector comprising : an array of photo-sensors (reference numeral 20 in Figure 2) for location in the path of the optical signal, and a controller (reference numeral 26 in Figure 2) for detecting which of the photo-sensors receives the optical signal (column 4 lines 60-64), and deriving a received signal from any output of any said photo-sensor that detects the optical signal (column 3 lines 62-63, column 4 lines 56 - column 5 lines 3). Margolin differs from the claimed invention in that Margolin fails to specifically teach that the controller comprises DC extraction circuitry for extracting a DC component from the output of each photo-sensor in the array; AC extraction circuitry for extracting an AC component from the output of each photo-sensor in the array, and, that the multiplier circuitry is coupled to the DC extraction circuitry and to the AC extraction circuitry for generating a separate multiplier output based on the AC component and the DC component of the output of each photo-sensor in the array. However, Curbelo, in the same field of photodetection, teaches it is well known in the art to include, as part of the controller circuitry of an optical detector, DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) for

Art Unit: 2633

extracting a DC component from the output of a photo-sensor (column 11 lines 38-41); AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for extracting an AC component from the output of a photo-sensor (e.g. "AC signal" of column 11 lines 38-41), and, multiplier circuitry (reference numeral 120 in Figure 7) coupled to the DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) and to the AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for generating a separate multiplier output (e.g. output of multiplier 120 in Figure 7) based on the AC component and the DC component of the output of a photo-sensor (reference numeral 10 in Figure 7). One skilled in the art would have been motivated to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier in the controller of Margolin in order to perform non-linearity correction for each photo-sensor of the array of Margolin without increasing the noise level in the detector signal, a benefit recognized by Curbelo (column 2 lines 46-52). Furthermore, one skilled in the art could have expected a reasonable degree of success in including the AC and DC extraction circuitry between each photo-sensor and multiplier in the controller of Margolin since Curbelo similarly teaches that the AC and DC extraction circuitry reside between a photo-sensor and multiplier. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier of Margolin in order to generate a separate multiplier output based on the AC component and the DC component of the output of a photo-sensor, thereby correcting for non-linearity in each photo-sensor of the array of Margolin without increasing the noise level in the detector signal.

Art Unit: 2633

4. Claims 2-10, 12-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda in view of Trezza and Curbelo (U.S. Patent No. 5,262,635).

Regarding claim 2 and 16, Ueda teaches an optical detector as claimed in claim 1 as well as a controller comprising multiplier circuitry (reference numeral 35 in Figure 12) for generating a separate multiplier output based on the output of each photo-sensor in the array (column 7 lines 7-9), but differs from the claimed invention in that Ueda fails to specifically teach that the controller comprises DC extraction circuitry for extracting a DC component from the output of each photo-sensor in the array; AC extraction circuitry for extracting an AC component from the output of each photo-sensor in the array, and, that the multiplier circuitry is coupled to the DC extraction circuitry and to the AC extraction circuitry for generating a separate multiplier output based on the AC component and the DC component of the output of each photo-sensor in the array. However, Curbelo, in the same field of photodetection, teaches it is well known in the art to include, as part of the controller circuitry of an optical detector, DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) for extracting a DC component from the output of a photo-sensor (column 11 lines 38-41); AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for extracting an AC component from the output of a photo-sensor (e.g. "AC signal" of column 11 lines 38-41), and, multiplier circuitry (reference numeral 120 in Figure 7) coupled to the DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) and to the AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for generating a separate multiplier output (e.g. output of multiplier 120 in Figure 7) based on the AC component and the DC component of the output of a photo-sensor (reference numeral 10 in Figure 7). One skilled in the art would have been motivated to include the AC and DC extraction circuitry of

Art Unit: 2633

Curbelo between each photo-sensor and multiplier in the controller of Ueda in order to perform non-linearity correction for each photo-sensor of the array of Ueda without increasing the noise level in the detector signal, a benefit recognized by Curbelo (column 2 lines 46-52).

Furthermore, one skilled in the art could have expected a reasonable degree of success in including the AC and DC extraction circuitry between each photo-sensor and multiplier in the controller of Ueda since Curbelo similarly teaches that the AC and DC extraction circuitry reside between a photo-sensor and multiplier. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier of Ueda in order to generate a separate multiplier output based on the AC component and the DC component of the output of a photo-sensor, thereby correcting for non-linearity in each photo-sensor of the array of Ueda without increasing the noise level in the detector signal.

Regarding claims 3 and 17, one skilled in the art would clearly have recognized that in combining the teachings of Ueda with the teachings of Curbelo as discussed above, each multiplier output (e.g. output of Multipliers 35 in Figure 12 of Ueda) would be based on the product (e.g. the outcome of multiplication) of the AC component and the DC component of the output of the corresponding photo-sensor.

Regarding claims 4 and 18, Ueda teaches that the controller comprises summation circuitry (reference numeral 37 in Figure 12) coupled to the multiplier circuitry (reference numeral 35 in Figure 12) for combining the multiplier outputs to generate the received signal (e.g. output of Adder 37 in Figure 12).

Regarding claim 5, one skilled in the art would clearly have recognized that in combining the teachings of Ueda with the teachings of Curbelo as discussed above, the DC extraction circuitry would comprise a plurality of DC extraction circuits each corresponding to a different one of the photo-sensors of Ueda (reference numeral 21 in Figure 12) and the AC extraction circuitry would comprise a plurality of AC extraction circuits each corresponding to a different one of the photo-sensors in that the combination of references would result in AC and DC extraction circuitry between each photo-sensor and multiplier of Ueda. One skilled in the art would clearly have recognized that such an implementation of the combination of references would allow for the correction of non-linearity in each photo-sensor of the array of Ueda via the plurality of AC and DC extraction circuitry without increasing the noise level in the detector signal.

Regarding claim 6, the combination of Ueda, Trezza, and Curbelo as discussed above teaches that each DC extraction circuit comprising a DC current sensor (reference numeral 115 in Figure 7 of Curbelo) coupled to the corresponding photo-sensor (reference numeral 21 in Figure 12 of Ueda).

Regarding claim 7, the combination of Ueda, Trezza, and Curbelo as discussed above teaches that each AC extraction circuit comprises a transimpedance amplifier (reference numeral 110 in Figure 7 of Curbelo) coupled to the corresponding photo-sensor (reference numeral 21 in Figure 12 of Ueda).

Regarding claim 8, Ueda teaches that the multiplier circuitry comprises a plurality of multiplier circuits (plural reference numeral 35 in Figure 12) each corresponding to a different one of the photo-sensors (reference numeral 21 in Figure 12).



Art Unit: 2633

Regarding claim 9, the combination of references and Curbelo in particular teaches that the DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) comprises circuitry (reference numeral 115 in Figure 7) for extracting the DC component based on the AC signal strength of the output of each photo-sensor in the array (e.g. DC extraction circuitry provides a DC component by taking into account the strength of both the AC and DC output of each photo-sensor in the array column 11 lines 31-34, 41-44).

Regarding claim 10, Ueda teaches the multiplier circuitry comprises a switch (column 7 lines 13-14).

Regarding claim 12, Ueda teaches that each photo-sensor in the array comprises a photo-diode (column 2 lines 29-32), which inherently include an anode and cathode.

Regarding claim 13, Ueda teaches that the array of photo-sensors comprises a two dimensional array of photo-sensors (e.g. 1x3 or 1x5 array of column 2 lines 33-34).

Regarding claim 19-22, the manner in which one skilled in the art connects the AC/DC extraction circuit to a photo diode is a matter of design choice and does not present patentable subject matter. Clearly, one skilled in the art possesses the ability to connect the AC/DC extraction circuit to either the anode or the cathode of the AC/DC extraction circuit.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda in view of Trezza, and Curbelo as applied to claims 2 and 10 above, and further in view of Gariboldi (U.S. Patent No. 5,747,978).

Regarding claim 11, the combination of Ueda, Trezza, and Curbelo differs from the claimed invention in that it fails to specifically teach that the switch has a hysteresis. However, providing hysteresis for switches is well known in the art. Gariboldi teaches it is well known in

Art Unit: 2633

the art to provide a hysteresis for a switch in order to prevent intermittent oscillations at the output of circuit (column 5 lines 46-52) due to switch bounce. One skilled in the art would have been motivated to provide hysteresis for the switch of the combination of references and Ueda in particular in order to speed up switching and to prevent intermittent oscillations at the output of circuit, both benefits noted by Gariboldi (column 5 lines 46-52). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide the switch of the combination of references with hysteresis as taught by Gariboldi.

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2633

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB



**AGUSTIN BELLO**  
**PATENT EXAMINER**

4/13/05